

CLAIMS:

1. A heating device for a fluid in a basin, comprising:
a flow-through path for a fluid reservoir of the basin;
a heater arranged in the flow-through path, the fluid being able to flow past said heater for the purpose of heating up;
at least one heating element arranged in the heater; and
a temperature sensor positioned in the heater and in thermal contact with the at least one heating element.
2. The heating device according to claim 1, wherein the heater comprises an area of solid material, said solid material having a high thermal conductivity.
3. The heating device according to claim 2, wherein the material for the area of solid material is an electrical insulator.
4. The heating device according to claim 2, wherein the at least one heating element is surrounded by said solid material.
5. The heating device according to claim 2, wherein the temperature sensor is surrounded by said solid material.
6. The heating device according to claim 2, wherein said solid material is arranged between the temperature sensor and the at least one heating element.

7. The heating device according to claim 1, wherein the temperature sensor is freely positionable in a longitudinal direction of the heater at least during production of the heater.
8. The heating device according to claim 1, wherein the temperature sensor is arranged in a recess of the heater.
9. The heating device according to claim 8, wherein the recess extends in a longitudinal direction of the heater.
10. The heating device according to claim 1, wherein the heater has a metallic sleeve.
11. The heating device according to claim 1, wherein the temperature sensor is seated at or near a highest point of the heater in the flow-through path with respect to the direction of gravity.
12. The heating device according to claim 1, wherein the flow-through path is formed in a tube.
13. The heating device according to claim 12, wherein the tube is adapted to be bent.
14. The heating device according to claim 13, wherein the heater is adapted to be bent with the tube.
15. The heating device according to claim 1, wherein the heater includes a heating rod seated in the flow-through path.

16. The heating device according to claim 1, wherein the at least one heating element is an electric resistance heating element having an extension in a longitudinal direction of the heater.
17. The heating device according to claim 1, wherein the temperature sensor is arranged with a front end being offset in relation to an adjacent heating end of the at least one heating element.
18. The heating device according to claim 17, wherein said front end of said temperature sensor is offset from said adjacent heating end by approximately 50 mm.
19. The heating device according to claim 1, wherein a circulation pump is integrated with said flow-through path.
20. The heating device according to claim 18, further comprising the circulation pump is coupled to an exit end of the flow-through path.
21. The heating device according to claim 1, wherein time-dependent temperature measurements are adapted to be carried out by the temperature sensor.
22. The heating device according to claim 1, further comprising a temperature monitoring device, the temperature sensor being coupled to said device, said device being adapted to control operation of said heater.
23. The heating device according to claim 22, wherein said device is adapted to selectively switch on and off heating of the fluid.

24. The heating device according to claim 22, wherein the temperature monitoring device comprises an evaluating device for evaluating signals of the temperature sensor.
25. The heating device according to claim 24, wherein said evaluating device is adapted to determine the time-dependent increase in temperature.
26. The heating device according to claim 24, wherein said evaluating device is adapted to determine an absolute temperature.
27. The heating device according to claim 1, further comprising an additional temperature sensor for determining the temperature of fluid entering the flow-through path.
28. The heating device according to claim 27, wherein the additional temperature sensor is coupled to a temperature monitoring device.
29. The heating device according to claim 1, further comprising an additional temperature sensor for determining the temperature of fluid exiting from the flow-through path.
30. The heating device according to claim 29, wherein the additional temperature sensor is coupled to a temperature monitoring device.
31. The heating device according to claim 1, further comprising a temperature sensor for the entry temperature of fluid flowing through the flow-through path into the basin.
32. The heating device according to claim 1, further comprising additional temperature sensors for determining temperatures at entry and exit of the flow-through path and an evaluating device adapted to determine the flow of fluid through the heating device

via the entry temperature of the fluid into the flow-through path and the exit temperature out of the flow-through path or out of the heating device.

- 33. The heating device according to claim 32, wherein a filter signal is adapted to be generated via the determination of the through-flow of the fluid.
- 34. The heating device according to claim 23, wherein a switch-off temperature for the heating is set such that residual heat and overheating of the fluid when entering the basin are taken into consideration.
- 35. The heating device according to claim 22, wherein the temperature monitoring device comprises a restart blocking device.
- 36. The heating device according to claim 22, wherein the temperature monitoring device takes an initial heating-up process into consideration.
- 37. The heating device according to claim 1, wherein the heater is adapted to be operated cyclically.
- 38. The heating device according to claim 1, wherein the heater comprises at least one additional temperature sensor.
- 39. The heating device according to claim 38, further comprising at least one additional safety loop for redundancy.

40. The heating device according to claim 1, wherein said flow-through path is positioned outside said fluid reservoir.
41. A heating method for a fluid in a basin;
flowing a fluid through a heating path located outside a reservoir of the basin, said path being heated by a heater with at least one heating element; and
measuring a temperature at least at one point along said path for monitoring the heating path with respect to dry running of the heater.
42. The heating method according to claim 41, wherein the measurement of the temperature is carried out at or near a location of the heating path at the highest point with respect to the direction of gravity.